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GARBAGE DISPOSAL UNIT
Description and Maintenance Instructions

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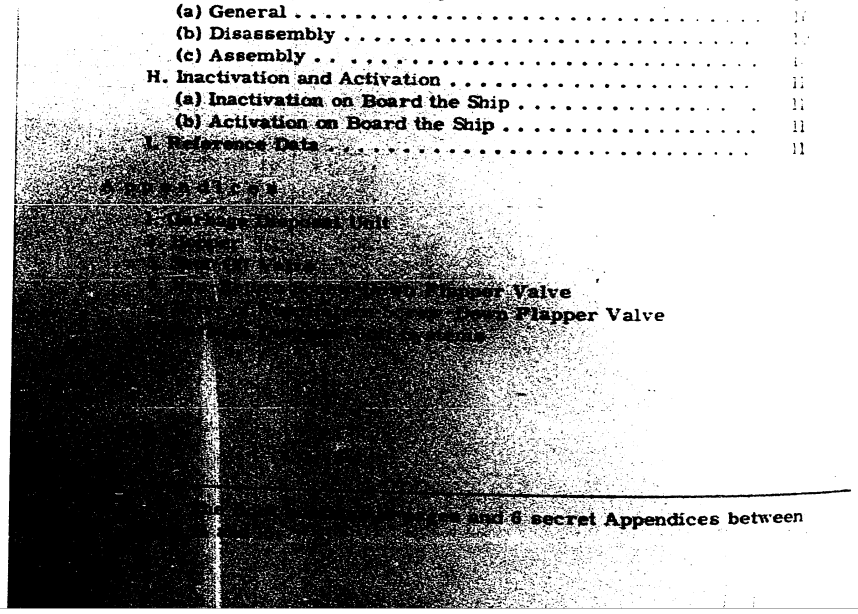


and 6 secret Appendices between

I. DESCRIPTION

A. APPLICATION AND BASIC CHARACTERISTICS

The garbage disposal unit is designed for discharging overboard garbage and other food remnants (except for bones) when running on the surface and submerged within the operating depth of submergence at a speed up to 8 knots.

The maximum weight of parts of the unit during disassembly does not exceed 98 kg. The maximum permissible pressure inside the hopper during blowing is 35 kgf/sq.cm.

B. GENERAL DESCRIPTION AND DESCRIPTION OF INDIVIDUAL UNITS

(See Appendix No.1)

The garbage disposal unit is arranged in compartment IV between frames 78-79, starboard.

The unit consists of hopper 1, of approximately 30-lit.capacity; shut-off valve 2; non-return screw-down flapper valve 5; drive 3 for the flapper valve; water and air pipe lines with all necessary shut-off and check fittings.

After the hopper has been charged with garbage, sea water is added there, after which the hopper is blown with compressed air. After blowing, the air is bled from the hopper into the compartment either through the check valve or through the deodorizing filter.

1. Hopper

(See Appendix No.2)

This consists of casing 13, ring 11 of the closing gear, cover 9, bracket 7 for hingeing the cover and drive 16 of the closing gear.

The casing is welded of a steel plate, with flange 15 being available in the lower taper portion. The flange is used to connect the shut-off valve. Support ring 14 is provided for attachment of the hopper to the foundation. Welded to the top of the casing is coaming 12 with grooves and an annular [illegible] drive ring 11 of the closing gear equipped with quadrant 19. The angle of turning of ring 11 is limited with stop 18 and stopper 22.

On the casing there are weld-ons to secure bracket 7 for hingeing the cover and the bracket of the drive for opening and closing the cover. Welded on to the casing are pipe unions to supply water and air to the hopper. Inside the casing a removable grating is installed.

Steel welded cover 9 is equipped with closing gear removable [illegible] levers 8 for hingeing the cover on the casing of the hopper. At the top of the cover a check plug and a handle for hingeing the cover are provided. A rubber packing ring 10 being arranged in the bottom of the cover.

The drive of the closing gear is just spur gear 20 manufactured integral with the shaft and installed in bracket 21. The spur gear is engaged with quadrant 19 secured on ring 11 of the closing gear.

Released and pressed positions of cover 9 are shown by indicator 23 and inscriptions RELEASED (OTZAT) and PRESSED (ZAZAT) provided on the cover.

2. Shut-Off Valve

(See Appendix No.3)

This is the second shut-off stage to prevent sea water from entering the hopper.

The shut-off mechanism of the valve is positioned at an angle of 45° to the flow path. When the valve is open, piston 24 enters the cavity under cover 25, thus letting the waste of the hopper pass freely.

3. Non-Return Screw-Down Flapper Valve with Drive

(See Appendices Nos 4 and 5)

The non-return screw-down flapper valve mounted on the pressure [illegible] casting consists of cast brass body 27, detachable cover 26, disc 29 with rubber packing ring, lever 28 and shaft 30. In the hub of the lever there is a [illegible] turning of the shaft through an angle of 90°. This [illegible] either forced closing of the disc or free turning [illegible] operation) or forced opening of it.

[illegible] is turned with the aid of the drive [illegible] gearing 33, handle 31 and indicator 32 [illegible] valve: forced closing - CLOSED [illegible] NEUTRAL (OPENED) and forced

[illegible] SYSTEMS [illegible] No.6)

[illegible] with the following systems: pipe [illegible] and provided with valve 41 for [illegible] pipe line intended to feed air to [illegible] blowing the hopper; pipe line with [illegible] after blowing. To check shut-off [illegible] valve 35 with a drain pipe [illegible] should escape from the sanitary [illegible] gets overfilled, the drain pipe

[illegible] pipes connected through unions [illegible] as far as valves 37 and 41 are [illegible] systems.

The pipe lines from the hopper as far as valves 37, 38 and 41 are tested together with the hopper under a pressure of 35 kgf/sq.cm by flooding the hopper with water and by blowing it with air fed from the intermediate pressure air system.

During the test the cover of the hopper shall reliably be closed.

The pipe line running from valve 38 for the deodorizing filter is tested under a pressure of 0.5 kgf/sq.cm.

The drain pipe line is subjected to flood test.

D. CONTROL INSTRUMENTS

The pipe line feeding air to the hopper is provided with pressure gauge 36 to check the presence of air pressure in the hopper with valve 37 closed, as well as the value of air pressure for blowing the loaded hopper.

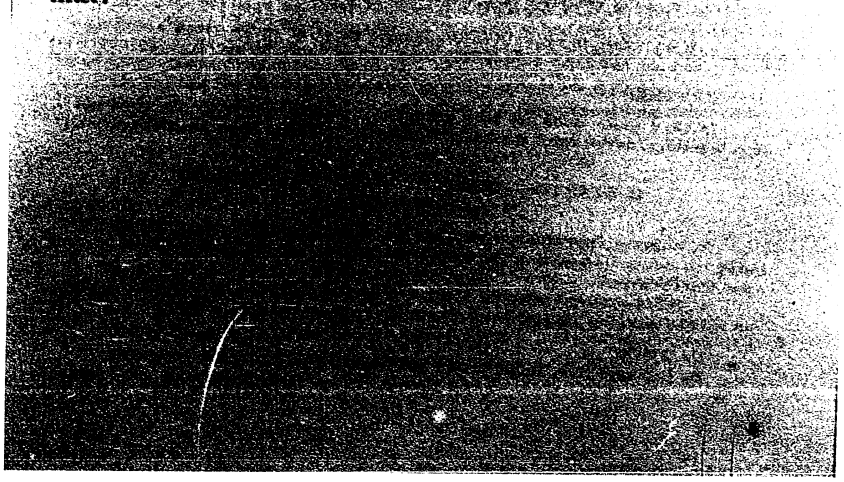
In case air is present in the hopper, never open cover 8 until the air has been completely bled from the hopper.

The air bleeding line has pressure gauge 39 to check the pressure of the air bled from the hopper through the deodorizing filter. The pressure shall not rise above 0.5 kgf/sq.cm lest the deodorizing filter should get damaged. The pressure is maintained within the permissible limits with the aid of butterfly valve 38.

The pressure gauges are subjected to tests every year.

Pressure gauge 36, type MTK 100:250/35, rated for a pressure of 60 kgf/sq.cm has a red line against reading 35 kgf/sq.cm which corresponds to the maximum pressure in the intermediate pressure air mains.

Pressure gauge 39, type MTK 100:250/1,5 rated for a pressure of 1 kgf/sq.cm has a red line against reading 0.5 kgf/sq.cm which corresponds to the maximum permissible pressure of air flowing through the deodorizing filter.



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II. MAINTENANCE INSTRUCTIONS

A. GENERAL SUPERVISION AND UPKEEP

(a) Keep the garbage disposal unit and its water and air supply systems in good order and in constant readiness for action.

(b) See to it that the pipe lines and the fittings be perfectly tight and give special attention to the sea fittings and flange connections.

(c) See to it that the gland packings of the valves and flapper valve be in good order.

(d) See to it that all the friction parts of the fittings and drives are properly lubricated.

(e) Regularly carry out preventive maintenance and repairs in accordance with the directions outlined in Section II-F.

(f) Keep the control instruments in first class condition. In case the instruments produce incorrect readings or the terms of their check-ups are over, send them for testing or replace with new ones.

B. PREPARATORY STEPS

Initial Position

(a) Cover 9 of the hopper is closed and locked with stopper 22.

(b) The handle of the closing gear drive of the hopper cover is removed and kept in the standard place.

(c) All the valves of the systems and the non-return screw-down flapper valve are in the CLOSED position.

1. Make sure that no water and air pressure are present in the hopper (regardless of the readings of pressure gauge 36), for which purpose open cock 42 and valve 35.

2. If no water is present in the hopper or after water stops escaping from it and air has been completely bled, close valve 35 and cock 42.

CAUTION!

In case water does not stop escaping from the hopper or air does not stop bleeding, never open the hopper cover until faults have been repaired.

C. STARTING, DURING-SERVICE MAINTENANCE AND STOPPING

3. Release ring 11 from stopper 22, mount the handle on drive 16, release the cover by rotating the handle in the counter-clockwise direction and open the cover.

4. Load garbage into the hopper. Wipe the coaming of the hopper and the rubber packing ring of the cover with rags to remove waste.

CAUTION!

Do not load tins, large bones and broken glass into the hopper.

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5. Close the cover, by turning the handle in the clockwise direction press it against the coaming and lock ring 11 with stopper 22.

6. If garbage is thick, add sea water, for which purpose open valve 41 on the water line and close it afterwards.

7. Set non-return screw-down flapper valve 5 to the NEUTRAL position (automatic operation) and open shut-off valve 2.

CAUTION!

Never set the flapper valve to the OPEN (forced opening) position when the hopper is being blown.

8. Open valve 37 and blow the hopper. Hissing noise of the air escaping overboard indicates that the blowing has been completed.

9. Close valve 37 and shut-off valve 2.

10. Bleed air from the hopper into the compartment through check valve 35 or through butterfly valve 38 on deodorizing filter 40. When doing so, slowly open butterfly valve 38 and bleed the air from the hopper to the deodorizing filter and simultaneously watch pressure gauge 39 whose readings should not exceed 0.5 kgf/sq.cm, since deodorizing filter 40 is rated for a pressure of 0.5 kgf/sq.cm.

N o t e: When bleeding air to deodorizing filter 40, regularly (every 25-30 seconds) open valve 35. In case water starts escaping through the check plug, immediately close butterfly valve 38 lest water should get into the deodorizing filter. Presence of water indicates that valve 2 and flapper valve 5 are untight.

11. In case the garbage disposal unit is to be used for the second time, perform the procedures proceeding in accordance with the directions outlined under Items 3 to 10.

12. After garbage has been discharged from the hopper, thoroughly [illegible] for which purpose fill the hopper with water twice with [illegible] proceeding in accordance with the directions outlined under Item 9 of this Section.

[illegible] disposal unit is not to be used for the purpose [illegible] unit to the initial position proceeding in accordance with Section II-B.

[illegible] WHEN NOT IN USE

[illegible] LONG TIME

[illegible] Conservation

[illegible] in good order:

[illegible] under Section II-A.

[illegible] performance of preventive [illegible] under Section II-F.

[illegible] unit on board the ship: [illegible] outlined under Section II-H.

[illegible] unit for absence of water and

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Restore the preservative layer, if necessary.

17. Open the cover of the hopper to inspect its interior and replace the rubber packing ring in accordance with the directions of Section II-B and Items 3 and 5 of Section II-C.

18. The wrench for opening valve 2 and the handle for the drive of flapper valve 5 should be removed and kept near the garbage disposal unit.

19. Every year open the inactive unit and its parts to check their condition and to reinactivate the unit.

E. TROUBLES AND REMEDIES

20. Troubles and their remedies are given below.

No.	Trouble	Cause	Correction on board the ship
21	Water in hopper	1. Valve 41 leaky	1. Blow hopper. Close valves 2 and 37 and blow line. Open check valve 35. Open valve 41 by 2-3 turns until water starts escaping through valve 35. Close valve. When no water escapes through check valve any longer, valve 41 is considered tight. If after several blowings there is leakage, discontinue water supply to valve 41 and remove trouble
22		2. Valve 2 or flapper valve 5 leaky	2. Blow hopper. If after several blowings water leakage persists: (a) close flapper valve 5 and lap valve 2 in case the latter is leaky (b) replace packing ring proceeding in accordance with directions outlined under Item 44, Section II-G, in case flapper valve 5 is leaky
23	Air in hopper	Air-feed valve 37 leaky	Cut out air supply from intermediate pressure air system and repair valve 37
24	[illegible]	1. Foreign matter under packing ring of cover	1. Close valves 41, 37 and 2 and make sure that pressure gauge 36 reads no pressure of air and no water leaks

No.	Trouble	Cause	Correction on board the ship
			through valve 35. Open cover of hopper and thoroughly clean packing surfaces of ring 10 and coaming 12
		2. Packing ring damaged	2. Inspect ring 10 and replace it, if necessary

F. PREVENTIVE MAINTENANCE AND REPAIRS

(a) Daily

25. Follow the directions outlined under Items "a", "b", "c" and "f" of Section II-A.

26. Check the garbage disposal unit for operation, for which purpose fill the unit with water with subsequent blowing it with air proceeding in accordance with the directions outlined under Sections II-B and II-C.

(b) Weekly and Every Time Before Putting to Sea

27. Perform the procedures of daily inspection.

28. Clean the interior of the hopper and its cover with rags soaked in kerosen. to remove fat.

29. Coat the friction parts of the garbage disposal unit with lubricant AMC-1.

30. Check the fittings for condition and make sure that the seals on the control instruments are in place and intact.

31. Check the water and air valves.

(c) Every Time When Docking the Submarine

32. Clean [illegible] of the fittings, elbow 4 and pipe 6 in the double-hull [illegible]

[illegible] of hopper 1, elbow 4 and pipe 6 with paint or [illegible] from corrosion.

[illegible] the outboard fittings following the direc-[illegible]

[illegible] necessary, the rubber rings and gland [illegible]

[illegible] from the oil cups and lubricating channels [illegible]

37. Remove dirt and old lubricant from the flanged joints, the worm drive for the flapper valve and the drive of the closing gear and treat them with fresh lubricant.

38. Check the outboard valves and the garbage disposal unit for tightness.

39. On completion of the docking procedure, before flooding the dock, flapper valve 5 should be closed and left in this position until the garbage disposal unit is to be tested again or to be used for the purpose provided for.

G. DISASSEMBLY AND ASSEMBLY

(in the scope of preventive maintenance and inactivation on board the ship)

(a) General

40. The garbage disposal unit may be disassembled only when the submarine is docked.

Hopper 1 and valve 2 may be disassembled when the submarine is afloat, with flapper valve 5 closed.

41. In case of disassembly of the garbage disposal unit with flapper valve 5 closed the handle for opening and closing the flapper valve must be removed from the drive. In this case special care shall be taken to protect the drive for opening and closing the flapper valve.

42. Before complete disassembly of the garbage disposal unit into its individual parts, mark all the mating parts and especially the

43. To replace the packing ring on the hopper cover or to disassemble the closing gear for inactivation, close valve 2 and flapper valve 5 and remove the wrench for opening the valve and the handle for opening the flapper valve.

44. The packing ring of flapper valve 5 may be replaced either [illegible] packing ring in the outlet branch pipe (provided the attachment [illegible] perfect tightness and reliable attachment of the [illegible] packing of the submarine.

(b) Disassembly

[illegible] individual parts of the garbage disposal [illegible] maintenance follow the requirements

[illegible] disassembly of some parts of the unit [illegible] observe the requirements outlined under

(c) Assembly

[illegible] in the order reverse to disassembly.

Prior to assembly wash all the parts in kerosene and wipe them dry with clean rags.

48. After assembly check the garbage disposal unit for tightness in accordance with the requirements of the respective drawings.

49. Check the garbage disposal unit for operation proceeding in accordance with the requirements outlined under Sections II-B and II-C.

H. INACTIVATION AND ACTIVATION

(a) Inactivation on Board the Ship

50. Start inactivation of the unit when it is in the initial position in accordance with Section II-B.

Open the cover of the hopper proceeding in accordance with the directions outlined under Items 1 and 2, Section II-B, and Item 3, Sect. on II-C.

51. Clean the interior of the hopper and its cover from fat, clean them with rags soaked in kerosene, wipe dry with clean rags and then coat with a layer of lubricant AMC-1.

52. Clean the unpainted surfaces of the hopper parts and of the flapper valve drive, as well as the friction and machined surfaces of the parts from dirt and old lubricant and then coat them with [illegible] protective compound.

53. Close the cover of the hopper, tighten it up with the [illegible] and lock the closing gear with stopper 22. Remove the nut [illegible] closing gear drive and close check valve 25.

54. Remove the wrench from valve 2 and the handle from the [illegible] of flapper valve 5. Keep them near the garbage disposal unit.

(b) Activation on Board the Ship

55. Completely remove corrosion-preventive [illegible] of the unit, wash them with kerosene, wipe dry with rags, inspect them to make sure that they are in good order and coat them with a thin layer of lubricant AMC-1.

56. Check the garbage disposal unit for operation proceeding in accordance with the requirements outlined under Section II-C by filling the garbage disposal unit with water and blowing it with air.

I. REFERENCE DATA

1. For lubrication of the outboard parts of the garbage disposal unit use lubricant AMC-1.

2. The rubber parts should be used or stored for not more than 5 years.

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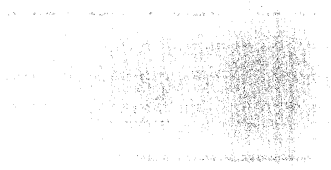
APPENDICES



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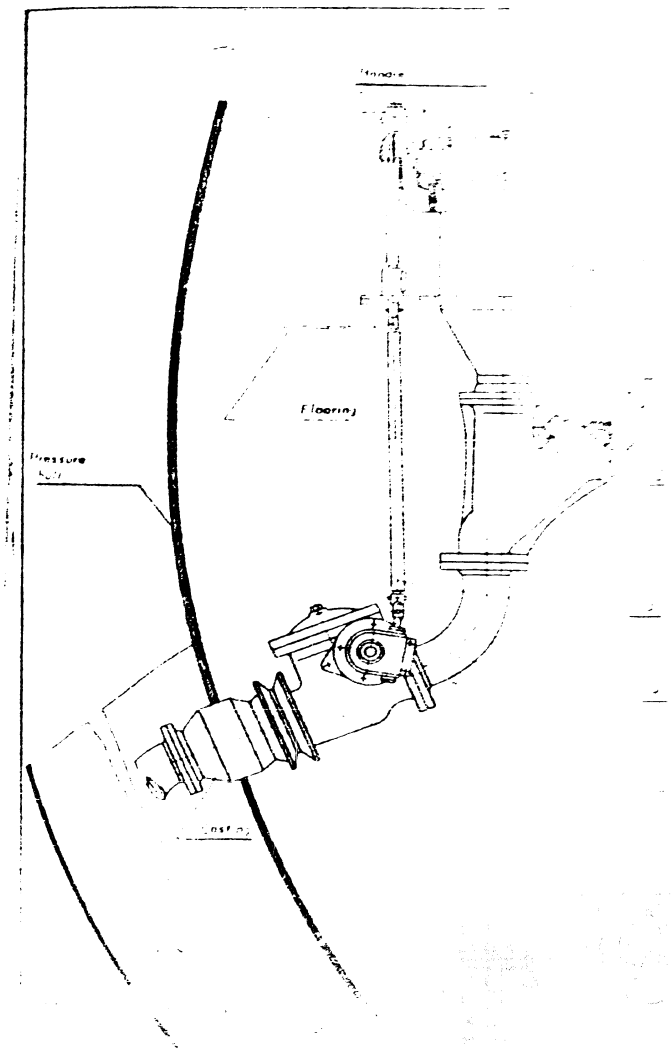

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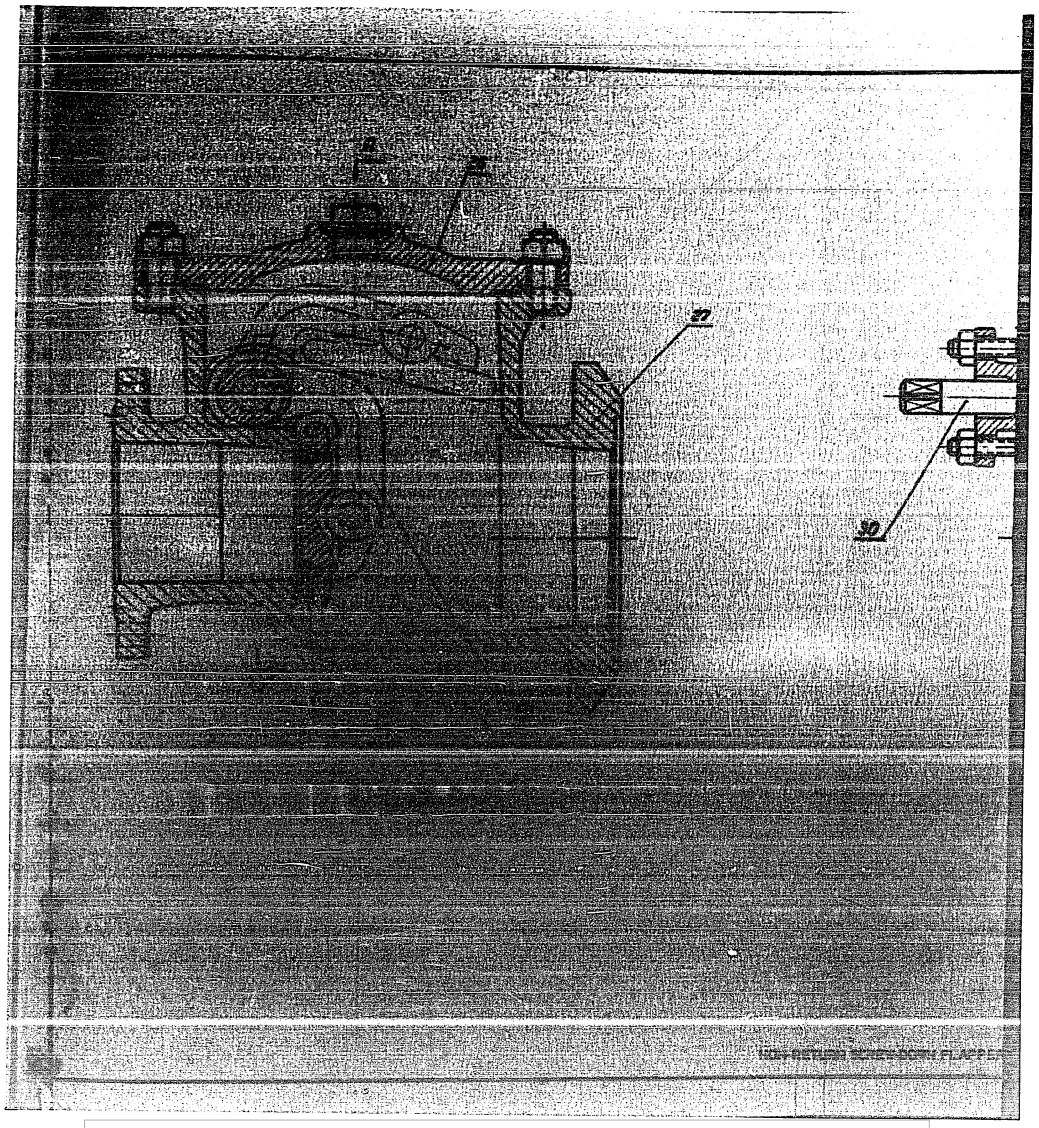

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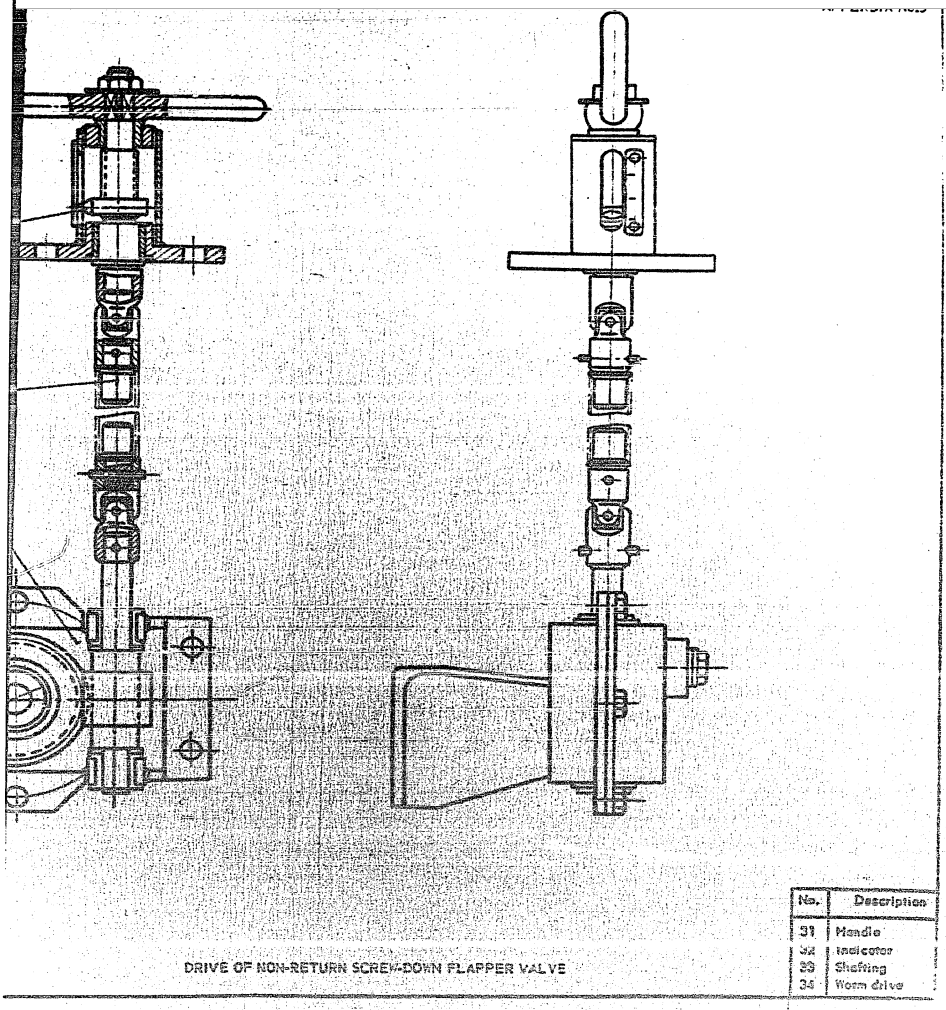
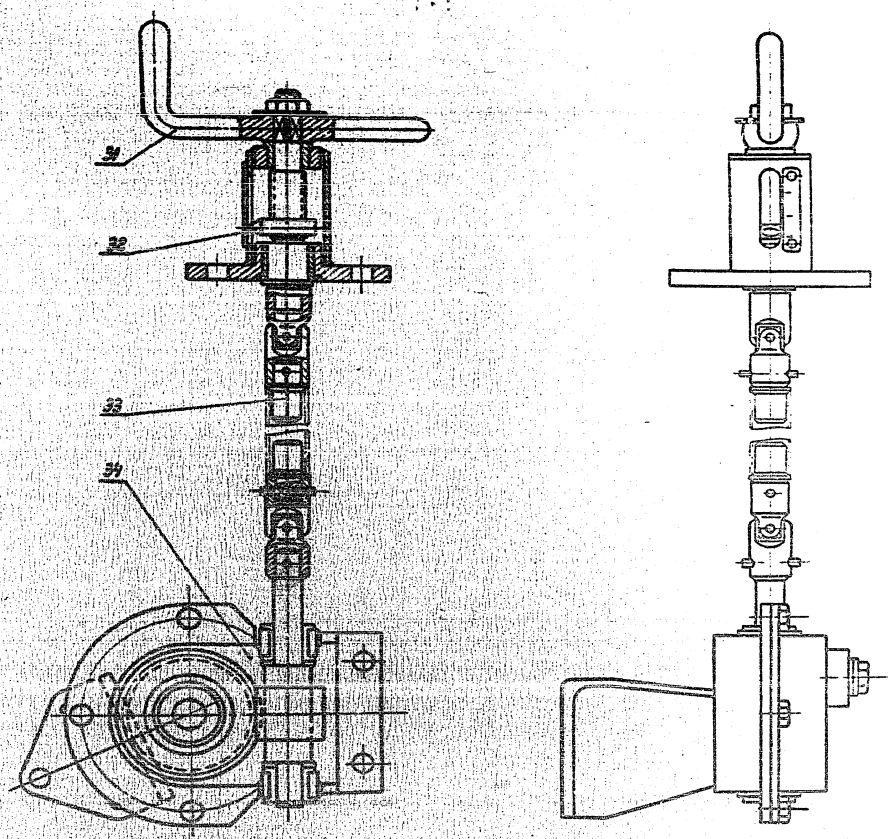


No.	Description
31	Handle
32	Indicator
33	Shafting
34	Worm drive

DRIVE OF NON-RETURN SCREW-DOWN FLAPPER VALVE



DRIVE OF NON-RETURN SCREW-DOWN FLAPPER VALVE

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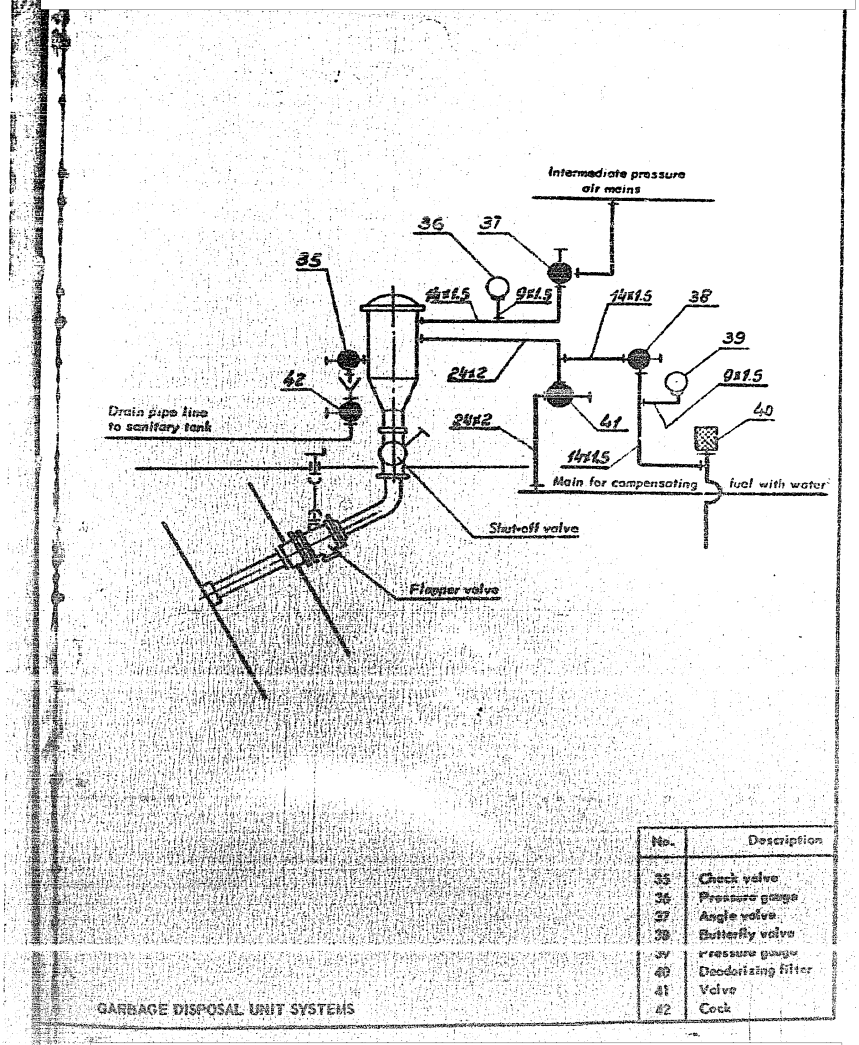

No.	Description
35	Check valve
36	Pressure gauge
37	Angle valve
38	Butterfly valve
39	Pressure gauge
40	Deodorizing filter
41	Valve
42	Cock

GARBAGE DISPOSAL UNIT SYSTEMS

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Installation of Garbage Disposal Unit

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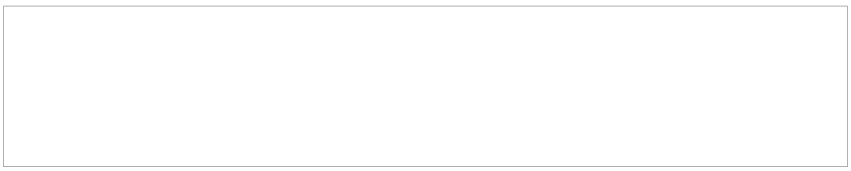

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